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ABSTRACT

The key purpose of this paper is to provide economics and business professors, particularly those teaching principles courses, with concrete examples of economic theory applied to the music industry. A second objective is to further the interest in economic theory among business majors and expose non-majors to economic principles via real world applications pertaining to music. The music business is an appropriate vehicle for assisting in the instruction of students, especially at the principles level, because it is significant in terms of both economics and popular culture; economic theory with no real world application is of little value and interest to students. Cites 27 sources. (BB)

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USING THE MUSIC INDUSTRY TO TEACH ECONOMIC PRINCIPLES

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Introduction

Adam Smith gave some attention to the arts in *The Wealth of Nations* where he accorded them limited value as neutral or mildly legitimate factors in political economy and politics (Troub 1980, p. 8). John Kenneth Galbraith (1973) predicted that "over a longer period of time the arts and products that reflect artistic accomplishment will . . . be increasingly central to economic development" (pp. 61-70). The arts overall and prerecorded music in particular are now major components of the United States and European economies with music sales of $13.193 billion and $13.002 billion respectively (IFPI 1999, p. 3,13) and a growing part of developing nations' GDP's. In 1998 worldwide retail sales of prerecorded music grew to $38.664 billion (p. 5). The record industry has successfully developed as a mass market over the past twenty five years and has become a well-established cultural industry recognized by governments throughout the world (IFPI 1997, p. 5).

There are various reasons to study the economics of the music industry due to its consequences for and significance to recording companies, retailers, individual artists, consumers, software and hardware manufacturers, and national GDP. I submit that the topic also has pedagogical appeal for college students. Look around your campus and see how many students are wearing Sony Walkmen. Go into their resident halls and view their music collections. Ask them what was the last concert they attended or what radio station they listen to or what club they frequent. Music is evidently a major part of young peoples' lives, particularly for those fourteen to twenty-five years old. So it is in the self-interest of those teaching economics to either include applications of entertainment in their classes or teach a class such as I have

developed, Entertainment Industry Economics, that focuses on music, movies, and theater. This practice is congruous with my philosophy of teaching economics: that is, economic theory with no real world application is of little value, at least to most students.

The purpose of this paper is to provide economics' and business' professors, particularly those teaching principles' courses, concrete examples of economic theory applied to the music industry. Another objective is to further the interest in economic theory among business majors and expose non-majors to economic principles via real-world applications pertaining to music.

Mother's Cooking is Always the Best

Instructors can teach economic principles in their international courses by examining the second largest export of the United States: entertainment; explain microeconomic principles by looking at the decline in the price of compact discs and the subsequent increase in demand of that same good and decrease in demand of the substitute good, cassettes; and examine macroeconomic principles by looking at the effect of GDP, both domestic and foreign, on the demand for music and examine the close correlation of GDP to music sales throughout a country's economic history. These topics appeal to most majors in business and economics and are of interest to those outside these majors.

Examples need not be perfect and in fact maybe it is better if they are not since students can than critique and improve upon your homemade examples. I believe our personal examples are generally the best ones. Maybe your interest is in golf, running,

swimming, literature, carpentry, or religion. Then you should "cook up" your own economic examples derived from your life-interests because those are the ones that you will teach with the most conviction and understanding. If you do so your students are more likely to see that economics is not some mathematical toy full of esoteric exercises, or merely Malthus' dismal science, but that it relates to most of human behavior. Following are some examples of mine as they relate to the music industry.

Mariah Carey & the Gross Domestic Product

When discussing GDP and personal consumption expenditures, it should be interesting for students to see the relationship of music sales to the changes in GDP over time. We often show students the graph of GDP in the U.S. starting from the early 20th century, but possibly the impact of GDP on the sale of music would provide that tangible element illustrating the "C" in the national income identity equation. That is, what are those elements that comprise "C" in GDP = C + I + G + (X-M)? One happens to be music expenditures, and it can be clearly seen that consumption spending on recorded music is closely related to GNP.

Although the core demand for music is large and well established, economic difficulties can soon dampen sales. This was well illustrated in both the early 1980's and the early 1990's (BPI 1995). Vogel (1998) alludes to macroeconomic variables and their effect on music demand when he mentions that the Great Depression triggered a collapse of record sales from $75 million in 1929 to $5 million in 1933 (p. 129). A similar recession occurred in both the world economy in general and the record industry from 1979-1984. Typically, consumer spending on music appears to peak at,

or just after, a peak of economic activity and to trough a few months after the overall economy does (p. 135).

David Bowie and the Deflator

When we talk about deflating current GDP or individual nominal commodity prices, students might not understand the significance unless they currently purchase the commodities such as autos, college education, or music. Instructors could use the following data to illustrate this principle by displaying the following example of cassette tape prices over time. Or the students can be given the nominal cost and deflator columns and asked to calculate the real prices.

CASSETTE TAPE PRICES 1973-1996

YEAR	DEFLATOR	NOMINAL	REAL
1973	.45	5.07	11.26
1974	.50	5.70	11.40
1975	.54	6.10	11.29
1976	.57	6.68	11.73
1977	.61	6.76	11.09
1978	.66	7.34	11.12
1979	.73	7.40	10.13
1980	.83	7.12	8.58
1981	.91	7.69	8.45
1982	.97	7.53	7.76
1983	1.00	7.65	7.65
1984	1.03	7.18	6.97
1985	1.07	7.11	6.65
1986	1.09	7.26	6.66
1987	1.13	7.22	6.39
1988	1.17	7.52	6.43
1989	1.23	7.50	6.10
1990	1.29	7.85	6.09
1991	1.34	8.39	6.26
1992	1.38	8.51	6.16
1993	1.42	8.59	6.05

1994	1.45	8.62	5.94
1995	1.48	8.45	5.73
1996	1.52	8.46	5.56

I Just Wanted a Song for my Wedding

I think elasticity is one of the hardest topics in principles of economics' courses to teach given the weak mathematical skills of many of today's students. It also seems that the examples we use are quite detached from or irrelevant to students' lives such as: are we more sensitive to changes in the price of beef or the price of salt? Maybe more appropriately we should be asking questions such as: if you really wanted a particular song for your wedding, would you be willing to pay more for that recording than you would a current best-selling pop recording? Then go on to explain the equation in light of the student's sensitivity to price given the factors that affect elasticity such as time, number and quality of substitutes, and individual tastes.

$$E = \frac{\%\Delta QuantityDemanded}{\%\Delta Price} \qquad (1)$$

Another question that might help to clarify the topic of elasticity would be: which format would you think has the lowest same price elasticity of demand: vinyl LPs, cassettes, or CDs? My results for the U.S. are as follows: music is a luxury good (income elasticity of demand = 1.403954) and that prices overall are elastic (same price elasticity of demand for CDs = -2.41403, MCs = -2.5285, vinyl LPs -1.3629) (Stamm 1996).

The following table lists average nominal prices for CDs, tapes, and LPs. This is

a good point of discussion for students on the reasons why LP and cassette prices have increased while CD prices have declined.

YEAR	LP	CD	TAPE
1983	8.06	21.50	7.65
1984	7.57	17.81	7.18
1985	7.67	17.23	7.11
1986	7.85	17.55	7.26
1987	7.41	15.61	7.22
1988	7.35	13.96	7.52
1989	6.37	12.49	7.50
1990	7.39	12.05	7.85
1991	6.13	13.01	8.39
1992	5.87	13.07	8.51
1993	8.83	13.14	8.59
1994	9.37	12.78	8.62

Source: RIAA

My Dad replaced his Led Zeppelin Vinyl Records with CDs this Christmas

The perennial savior of the music industry has been new formats. Advances in music come rarely on the artistic side; generally they come in the form of new carriers about every ten years. With new technologies, the industry has found revival almost every time. Even in the lifetimes of most students, carriers have gone from cassette tapes, to CDs, to minidiscs, and now to DVDs.

This can lead to a useful discussion of innovation and/or technological change, which have affected the economics of the music industry. In the midst of a declining market in unit sales, the music industry has continued to increase its total revenues do to the introduction of new carriers. This, of course, is the hope for any new format of which the current example is DVD. If students can see how, in a very basic way, an _

industry has been transformed by improvements in the quality of music carriers, than this can be translated into a broader discussion into the essentials for economic growth.

As an Internet assignment the students could be asked to do simple research on the history of music in the area of technological advancement. They can be directed to the following sites for this data:

1. http://www.mediahistory.com/record.html\
2. http://ac.acusd.edu/History/recording/notes.html
3. http://www.tinfoil.com

I Can See Clearly Now Why GDP Should Include Quality Differences

It may seem somewhat obscure to some students why GDP now incorporates the fact that even though goods over time have increased or decreased in price, that price change is not necessarily paralleled by a simultaneous change in value, and in fact, many items that while decreasing in price have also increased in value such as personal computers with their greater speed and applications.

Do we buy sugar or sweetness? Do we purchase a Ford Taurus or the characteristics of that automobile? And analogously, do we buy music, or do we purchasing the utility that emanates from the portability, durability, audio quality (soundability), compatibility, duplicatability, availability, and overall feasibility of use that is characteristic of a particular sound carrier. And in fact, can we not predict the next successful format on the basis of these characteristics.

There are two levels of instruction that can take place here. You can analyze the prices of CDs today and ask your students, "aren't you getting more for your money

and therefore aren't' CD prices understating their intrinsic or economic value?" And aren't there many goods in society whose prices have declined yet yield greater economic value than did their predecessors at higher prices? You might just want to entertain some general discussion of the topic, or look at more detailed government data, which the students could use in determining the hedonic price of music. Students could be directed toward a government study (Schulman, Ronca, Bucuvalas 1989) showing the differences in various individuals' perceptions of three distinct audio formats.

The following formula could be used to derive a simple hedonic average price for prerecorded music for the U.S. from 1973-1994. The hedonic price is formed by indexing the perceived quality of playback devices along with the perceived comparative quality of the respective format. The equation form is:

$$HP_y = \frac{TotalConstantSales_y}{\sum_{i=1}^{3}(PQF_{i,y} \bullet WPQP_{i,y} \bullet FMT_{i,y})} \qquad (2)$$

HP = Real Hedonic Average Price for Prerecorded Music
Y = Year 1973.....1994
PQF = Comparative Perception of Format Quality
WPQP= Weight of Perception of Playback Device
FMT = Format Quantity
i = Formats Singles, LPS, Cassettes, CDs

Following are my results for the U.S.:

Table 6 U.S. Hedonic Price

YEAR	HEDONIC PRICE	TOTAL RETAIL (MILL)
1973	11.99	2001.0
1974	12.14	2186.4
1975	13.34	2378.3
1976	13.19	2732.0

YEAR	HEDONIC PRICE	TOTAL RETAIL (MILL)
1977	12.59	3500.8
1978	12.85	4131.4
1979	10.91	3685.4
1980	8.91	3862.1
1981	8.06	3969.9
1982	6.86	3641.6
1983	6.57	3814.9
1984	5.88	4370.4
1985	5.60	4368.8
1986	5.60	4651.1
1987	5.17	5567.5
1988	4.92	6254.8
1989	4.49	6579.4
1990	4.32	7541.1
1991	4.36	7834.2
1992	4.28	9024.0
1993	4.16	10046.6
1994	3.94	12068.0
1995	3.87	12322.3

Another approach to determining indexes is the methodology of Waugh (1929, p. 144). Waugh's aim, according to Berndt (1991), was to estimate parameters in the multiple regression equation:

$$p_n = \beta_0 + \beta_1 \bullet GREEN_n + \beta_2 \bullet NOSTALKS_n + \beta_3 \bullet DISPERSE_n + usubn \qquad (3)$$

for n = 1, ... 200, where the least squares estimates of the coefficients could be interpreted as representing the partial effect of a change in one quality characteristic on price, all other quality characteristics being held fixed (p. 107). If I run the following:

$$Total\,Value_n = \beta_0 + \beta_1 \bullet CDs_n + \beta_2 \bullet LPs_n + \beta_3 \bullet MCs_n + u_n \qquad (4)$$

for n = 1973-1994 I get the following results (t's in parentheses):

Constant = 939.604

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$\beta_1(CDs) = 13.9254$ (27.551)
$\beta_2(LPs) = 7.18710$ (5.237)
$\beta_3(MCs) = 5.88713$ (7.3213)
DW = 1.95966
$R^2 = .99359$

The above gives us indexes of 2.365 for CDs; 1.22 for LPS; and 1.00 for cassettes. This is a different approach for determining indexes than the hedonic method, however it does give similar results except that LPs now are ranked higher than cassette tapes.

Given the above results you might have the class comment on why LPs are perceived to bring more value to consumers than cassettes. A follow-up question might be to ask students what the next music carrier will be and what will be its characteristics.

Intellectual Property Rights or Thou Shall Not Steal?

Another "hot" topic today for students, and one pertinent to those teaching the principles of private enterprise, is that of piracy. This can be a great entrée into a brief discussion of property rights as they pertain to law and economics or economic development. The music industry is paranoid of consumers copying or downloading songs thus avoiding the payment of royalties to the artists and record companies. Current debate surrounds the MP3 format, which allows "pirates" to copy and transmit (broadcast) musical fixations via the Internet and play it back in units such as Diamond Rio Walkmen. The industry has hired the same person who created the MPEG compression technology, which is used in the MP3 transmission, to work for them in creating a technical format for the copyrighted sale and digital delivery of music over

the Internet.

The second reason to study piracy is that prerecorded music is a $40 billion industry worldwide and over $5 billion of prerecorded music is pirated each year. This amount represents sales of 1.5 billion cassettes and 350 million CDs. Globally, one in every three music carriers produced is a pirated copy.

The Recording Industry Association of America (RIAA) now determines the level of piracy in a country by comparing the legitimate demand (which is easily arrived at) and the industry capacity. The assumption being that the gap between the two is the amount of piracy in a particular country. What should be noted is where there are large disparities in production capacity and legitimate demand. The following estimates from the International Federation of the Phonographic Industry (IFPI) and RIAA are for 1997.

COUNTRY	CURRENT ESTIMATED CAPACITY - ALL FORMATS (CD ROM, CD-AUDIO, CD-VIDEO) (million units)	TOTAL LEGITIMATE DEMAND-ALL CD FORMATS (million units)
Bulgaria	45	.1
China	200	26
Czech Republic	45	5
Hong Kong	330	17
Israel	50	6
Malaysia	90	4
Taiwan	350	32
Macau	100	Negligible

IFPI PRIORITY COUNTRIES IN TERMS OF DOMESTIC 1996		
COUNTRY	**PIRACY US$millions**	**PIRACY LEVEL % of UNITS**
Russia	350	70
Brazil	200	45
China	165	54
Italy	105	22
India	100	30
Mexico	70	50
Argentina	65	30
Saudi Arabia	35	30
Greece	22	25
Malaysia	18	20

When will a consumer copy a recording and when will he purchase an original? The consumer buys the original if his valuation exceeds the price and if buying is cheaper than copying. Thus, if there were competitive price pressure from originals, then we would expect copying to be reduced. Much also depends on the opportunity cost of copying and we would expect this cost to increase in societies with high-income levels and standards of living.

Those teaching the principles of private enterprise and capitalism would be remiss if they didn't include a discussion of the economic efficiency argument for copyright law. An instructor could hold up a CD and ask the class, "why is it illegal to copy the new Kid Rock recording and distribute it to our friends?" The answer lies in

the standard economic theory of information which states that copyright laws attempt to convey the same monopoly rewards to writers, composers, and other artists as the patent laws do for inventors as incentives to creative activity. According to the theory, in the absence of monopoly protection (copyright) for original artistic creations, there will be too little creative activity. This is because once a creation is disseminated, it becomes very difficult to exclude nonpaying beneficiaries who will enjoy the creation without having to pay the creator for the pleasure. As a result, creators cannot easily recoup enough revenue through market transactions to justify the expense of producing their work or foregoing other profitable uses of their time and talent. The copyright monopoly gives the creator the right to bring an action against nonpaying beneficiaries of his creation and so reduces the public goods problem associated with original artistic creation (Cooter & Ulen 1988, 140-141).

The graph in the appendix showing the correlation among hedonic price, piracy, and sales, seems to support such reasoning and in an interesting way, brings together the concepts of intellectual property, piracy, and opportunity cost:

Demand & Supply

Most economics' instructors hope that those students who only take one or two semesters of economics will at minimum retain an understanding of supply and demand for years to come. The supply side is somewhat complicated in the music industry, however in a very simple way you could describe the demand for music in the following equation, which would introduce students to demand functions:

$$D = F(P, P_s, P_c, Y, T, S, A)$$

where:

P = same price of music
P_c = price of complements
P_S = price of substitutes
A = age
T = technology
Y = national income
S = piracy

Essays that directly or indirectly relate to the demand for music which students might consider as sources for minor research projects include: *The Demand for Vinyl LPs 1975-1988* and *The Dynamics of Product Differentiation in the British Record Industry*, by Andrew Burke (1994 & 1995), *Estimating the Demand for Broadway Theater: A Preliminary Inquiry*, by Kelejian and Lawrence (1980), *Estimating the Demand for Record Albums* by Alexander Belinfante and Reuben R. Davis Jr. (1977), *Estimating the Effect of Copying on the Demand for Original Creative Works*, by William R. Johnson (1989), documents by Schulman, Ronca, and Bucuvalas, Inc. (1989), all contracted by the Office of Technology Assessment, Home *Copying and Its Economic Effect: An Approach for Analyzing the Home Copying Survey* by Michael L. Katz (1989), *Consumer Welfare and Audio Home-Copying Restrictions: An Empirical Assessment* by Fred L. Mannering (1989), *The Economics of the American Theatre* and *The Demand for Broadway Theatre Tickets* by Thomas Gale Moore (1968 & 1966).

It's a Small World After All - Industry Structure

The topic of industry structure can easily be segued into the principles' chapter on oligopoly. As of a few years ago, six companies controlled over 80% of the world's

production of music. Those same six dominated the music industry in the United States. Five of the six - Sony (Japan), Philips N.V. (Netherlands), Thorn/EMI (United Kingdom), Bertelsmann (BMG) A.G. (West Germany), and MCA (80% owned by Seagrams of Canada and 20% by Japan's Matsushite Electric) - were based outside the U.S. Following Sony's January 1988 acquisition of CBS Records, the sole remaining U.S.-based firm among the big six was Warner Communications.

In 1998 Universal /MCA purchased Polygram from Philips to reduce the field to five. Early in 2000, Time Warner Inc. made plans to acquire control of the music business of the EMI Group and merge it with Warner Music, creating what could become the world's largest record company narrowing the field further to four. The merged music company, to be known as Warner EMI Music, would sell about one of four records in the United States and also have a vast international presence. EMI, whose roster of artists includes the Rolling Stones, the Spice Girls, and Robbie Williams, has been strongest in Europe and some other international markets like Japan. Market shares are now as follows:

1999 U.S. market share based on current albums and catalog sales

Universal Music Group	26.39%
Sony Music Entertainment	17.56%
Warner Music Group	16.94%
EMI Music	9.58%
BMG Entertainment	16.07%

There is further evidence of oligopolistic influences in the industry as reflected by the resilience of high compact disc prices even though production costs have declined to the point where they are not significantly higher than cassette costs.

The distribution of market share among major and independent firms in the

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domestic music recording industry has shown fluctuations approximating the shape of a *W*, with two periods of low concentration, preceded and followed by several periods of high concentration (Alexander 1994, p. 86). In the industry's infancy (1890-1900), three major firms produced the output of most audio-related products, both in terms of the playback devices (i.e., cylinder and record players) and the audio products themselves (i.e., cylinders and records). This initial phase of high industry concentration was followed by a period of rapid technical innovation in manufacturing technology (1900-1910), which led to the entry of many new firms and a dispersion of market share. In the nine-year period between 1914 and 1923, the number of firms manufacturing phonographs and records grew at an average annual rate of 20%. However, in the six-year period from 1923 to 1929, the number of firms producing record players and/or records declined at an average annual rate of 11%. Horizontal integration explains much of the renewed high levels of industry concentration. From 1930 to 1945 the music recording industry was again highly concentrated. A collapse in record sales from $75 million in 1929 to $5 million in 1933 accelerated the rate of industry concentration.

Recovery in the industry was hampered by the onset of WWII that caused a shortage in the supply of shellac needed to produce records. However in the late 1940's, another significant technological innovation emerged: magnetic tape recording. This new cost-reducing innovation induced entry on a massive scale. While major firms gained 75% of the industry's market share in 1948, that total fell to 48% by 1956 and 25% by 1962. In the period after 1962, and continuing to the preset, major firms reacquired market share. Horizontal integration explains much of the current structure

of the recording industry as the mid-1960's marked the beginning of a wave of take-overs and buy-outs of independent firms that has continued into the 1990's (p. 86).

Conclusions

In this paper I attempted to give some concrete examples of how the music industry can be used to convey basic economic principles. In addition, an illustration is given on how to relate the topic of music to private enterprise system. By no means are these examples intended to be exhaustive and in fact a basic tenet of the paper is that those examples that we create ourselves are often the best.

The music business is significant both in terms of economics and popular culture, thus making it an appropriate vehicle for assisting in our instruction of students, especially at the principles level. Topics such as consumer demand, GDP, real and nominal prices, piracy, elasticity, industry structure, and private enterprise, all can be embellished in the classroom by using examples from the music industry; examples that most college students will relate to. Whether it is sports, religion, or music, applications to the world that our students live in bring economics topics to life and this relevance, I believe, promotes both learning and the retention of that knowledge.

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